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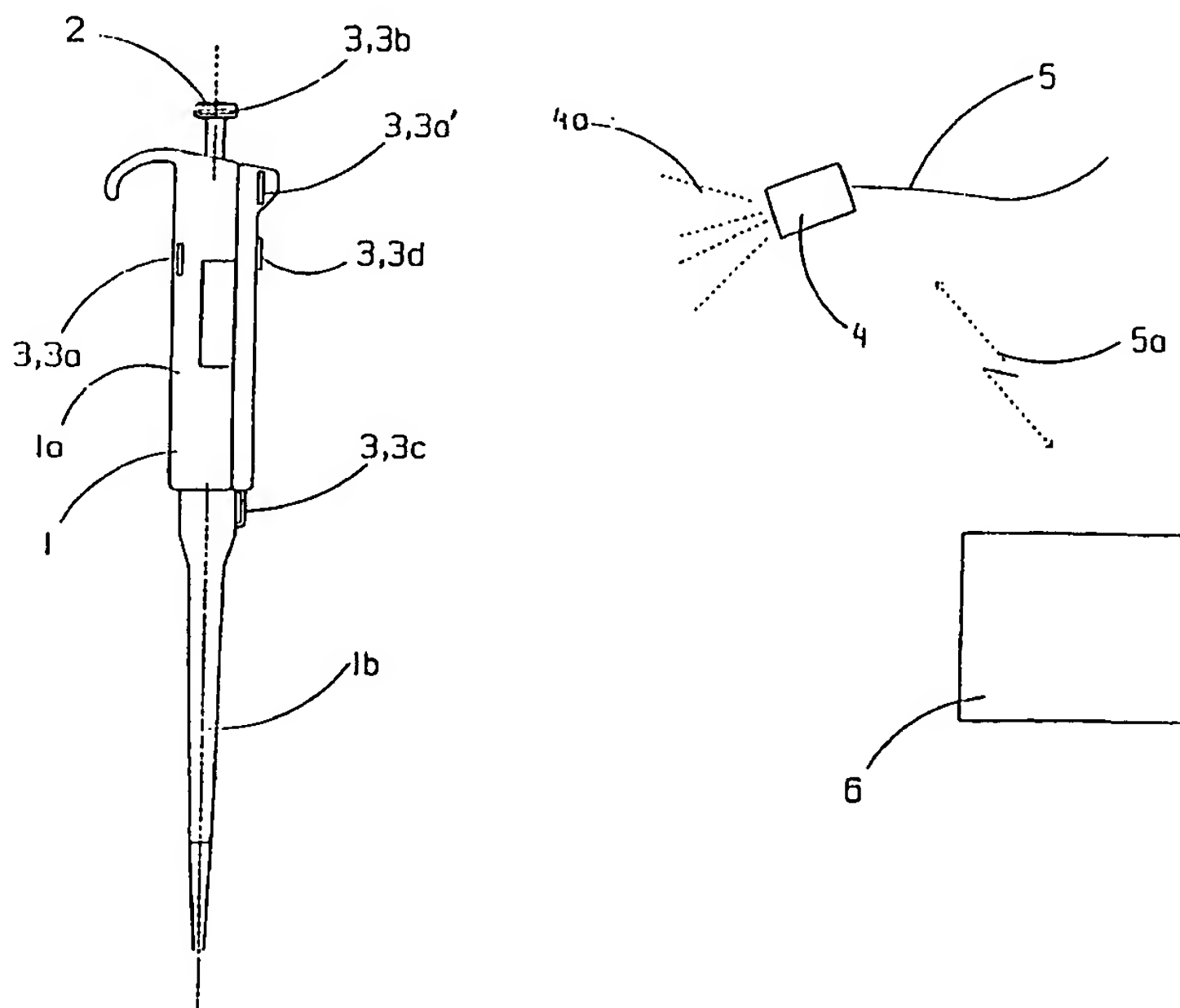
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*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: IDENTIFIABLE PIPETTE



(57) Abstract: The invention relates to a pipette (1) having a monitoring means (3) that can be read or written upon. The monitoring means (3) may be a microchip, for instance, or any similar indicator that can be identified. The information contained in the monitoring means (3) can be read or changed by means of a reading device (4).



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DECLARATION

As a below-named inventor, I(we) hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name;

I verily believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

HELMET
(Insert invention title)

the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to in the declaration.

I acknowledge the duty to disclose all information which is known to be material to patentability of this application in accordance with Title 37, Code of Federal Regulations §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119, of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:
(List prior foreign applications)

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DE	405 05 666.4	5 November 2005	<input type="checkbox"/> YES <input type="checkbox"/> NO
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			<input type="checkbox"/> YES <input type="checkbox"/> NO

I hereby declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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(Attach additional sheets for third and subsequent inventors)

Identifiable pipette**Technical Field**

- 5 The invention relates to laboratory technology, particularly to a pipette used for dosing liquids. The pipette comprises a cylinder and a piston movable within this for aspirating liquid into and removing liquid from a container connected with the cylinder.

10 **Technical background**

- Pipettes are commonly used in laboratory technology for dosing liquids, in analyses, in various preparation processes and sampling, for instance. There are both manually operated pipettes and pipettes driven by an electric motor. The dosage
15 precision of the pipette is often particularly important, and for this reason the pipette must be equipped with facilities for calibrating the volume to be set. Especially when dosing small volumes, special attention must be paid to achieving and maintaining adequate precision.

- 20 Pipettes are calibrated during their manufacture. The calibration should be regularly checked in use and corrected whenever necessary. A pipette should be regularly serviced in other respects as well in order to maintain precision, operational reliability and safety. Besides the number of applications, the calibration and service frequency required depend on the object of application. In clinical determinations, for
25 instance, the reliability and safety required may be of quite a different order than in ordinary research work.

- Electrically driven pipettes usually have a microprocessor, allowing the pipette to be used as desired. It is also known that the programming can be externally altered
30 if necessary. Thus, for instance, EP patent specification 999,432 discloses such an electrically driven pipette.

General description of the invention

- 35 A pipette as defined in claim 1 has now been invented. The other claims describe some preferred embodiments of the invention.

In accordance with the invention, a monitoring means, such as a microchip containing readable data, is disposed in connection with the pipette. Most preferably, data can also be written in the monitoring means. Communication can take place over a wireless connection, for instance using radio or IR frequencies. The means is solidly mounted in the pipette, within a button or a handle, for instance. The means may also be integrated in the pipette structure, and will thus withstand use under various circumstances. The means can thus be integrated in a part made by injection moulding at the moulding stage. Microchips data, for instance, can be read from a distance of several metres, and the microchip does not require any power source or galvanic contact.

The monitoring means may be, for instance, a microchip, an electronic escort memory, a magnetic card, a smart card or any similar identifiable indicator. The information contained in the means can be read and most preferably also changed, such as added or deleted. Reading or writing can be arranged to be carried out automatically or performed by the user. The reading device may be fixedly located in connection with the work place or at the storage location of the device, or it may be carried or transferred, whenever necessary by the user.

Data transmission between the reading and writing device and the other data system may take place via a cable or most preferably by wireless means by applying radio-wave techniques, for instance. Data transmission may also take place by first reading the information contained in an identifier into a storage medium, from where it is transferred, if necessary, to a data system, where it is registered, processed and reported. The service or adjustment required for the monitored pipettes are determined using the registered data.

The invention aims at monitoring and enhancing the use of pipettes and at predicting the need for service and spare parts. In the method, the monitoring means are used for registering the manufacturing, operation, calibration and service data of the pipette. The data obtained, the history databases of the system and computing software allow controlling the use of the pipettes and monitoring their use and condition. Registration takes place utilising the information contained in the monitoring means connected with the pipette.

The invention also relates to a method for monitoring the pipette.

Drawings

The invention is explained in detail below with the aid of some preferred embodiment examples and with reference to the enclosed drawings.

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Figure 1 shows an application of a method of the invention in connection with a single-channel pipette.

Detailed description of an embodiment

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Figure 1 shows a single-channel pipette 1, which comprises a handle 1a, a body 1b and a press button 2. The pipette 1 has a monitoring means 3, which is a microchip or the like. The figure shows a number of optional locations of the monitoring means 3 in the pipette. The means 3 may be placed inside the handle or an associated tip-removing plunger (location 3a or 3a'), inside the button 2 (location 3b), encapsulated in the body 1b (location 3c) or on the surface of the handle 1a (location 3d). The maintenance of the data content of the monitoring means 3 is performed using an appropriate reading and writing device 4. Data transmission between the reading and writing device 4 and the monitoring device 4 may occur with a wireless signal 4a by applying radio-wave techniques, for instance. The device 4 may communicate with other data systems 6 either over a communication line 5 or with a wireless signal 5a.

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The monitoring means 3 may contain the following data, for instance:

25

- type of apparatus and serial number and date of manufacture
- operation hours, date of implementation and storage period
- mass and dimensions
- chemical resistance
- information about service and maintenance operations required, such as calibration, spare parts to be replaced, cleaning, autoclaving, and performance of these
- information about any repairs done
- storage location and storage conditions

30

The information contained in the monitoring means 3 is collected in history databases or similar files provided in connection with the data system 6, where it is processed according to the purpose of use. The pipette is identified through the apparatus number, for instance, and the data are stored in the database files over the entire period of use of the device. In this method, adequate technical methods and

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devices can be used to collect data about the time of use of the pipette, dosed liquids or the like. The method allows determination of the checking, preventive maintenance and repair intervals of the pipette using the information that has been collected and processed. The work productivity can be enhanced when this predictive information is made available to the user at a sufficiently early stage.

The pipette may also comprise several means 3.

Claims

1. A pipette (1), characterised in comprising a monitoring means (3), which is associated with an external reading device (4), the monitoring means containing data
5 that can be read and preferably also changed by the reading device.
2. A pipette as defined in claim 1, in which the monitoring device (3) is a microchip, an electronic escort memory, a magnetic card, a smart card or any similar indicator that can be identified.
- 10 3. A pipette as defined in claim 1 or 2, in which the monitoring device (3) contains one or more of the following data:
- type of apparatus and serial number and date of manufacture
 - operation hours, date of implementation and storage period
 - 15 - mass and dimensions
 - chemical resistance
 - information about service and maintenance operations required, such as calibration, spare parts to be replaced, cleaning, autoclaving, and performance of these
 - information about any repairs done
 - 20 - storage location and storage conditions
4. A method for monitoring a pipette (1), characterised in that the pipette is connected with a monitoring means (3), which is associated with an external reading device (4), the monitoring means containing data that can be read and preferably
25 also changed by the reading device, and the data contained in the monitoring device are read and changed with the aid of the reading device.
5. A method as defined in claim 4, in which data are read and preferably also changed between the monitoring means (3) and the reading device (4) over a wireless connection.
30
6. A monitoring means (3) to be attached to a pipette, characterised in containing data that can be read, preferably also changed, by a reading device (4) outside the pipette (1).
- 35 7. A pipette reading device (4), characterised in being a reading device (4) outside the pipette (1), by means of which data contained in the monitoring means in the pipette can be read and preferably also changed.

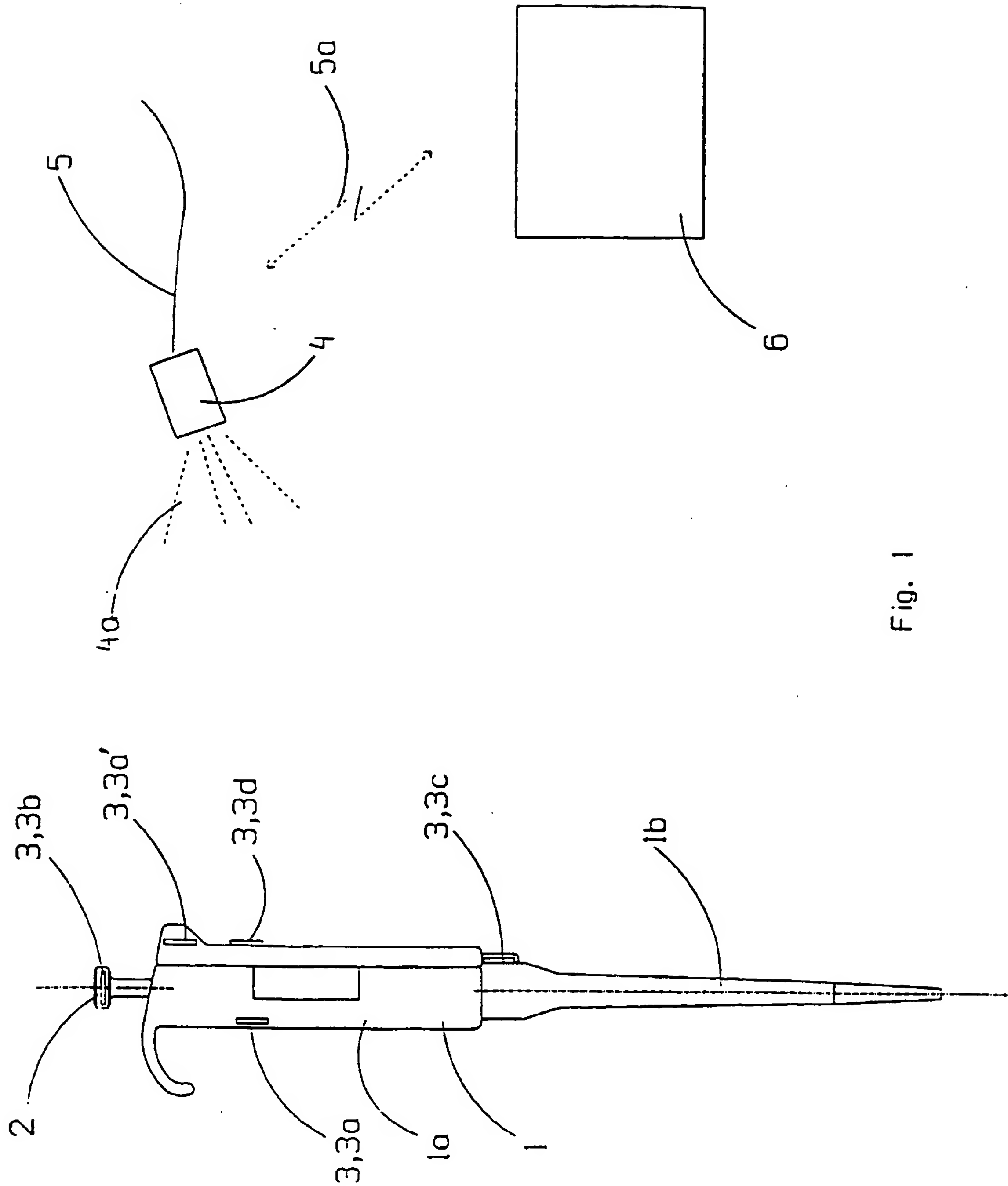


Fig. 1

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G01F 11/00, B01L 3/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G01F, B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 5343769 A (SUOVANIEMI ET AL), 6 Sept 1994 (06.09.94), See the whole document	1-4,6-7
Y	--	5
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Y	--	5

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

- * Special categories of cited documents:
- | | |
|---|--|
| "A" document defining the general state of the art which is not considered to be of particular relevance | "I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
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| "P" document published prior to the international filing date but later than the priority date claimed | |

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INTERNATIONAL SEARCH REPORT

International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

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